



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,009	08/22/2001	Hidenobu Fukumasa	1275-45	8619
7590		11/30/2004		
Nixon & Vanderhye 8th Floor 1100 North Glebe Road Arlington, VA 22201-4714			EXAMINER GOSHTASBI, JAMSHID	
			ART UNIT 2637	PAPER NUMBER

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/914,009

Applicant(s)

FUKUMASA, HIDENOBU

Examiner

Jamshid Goshtasbi-G.

Art Unit

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-9 is/are rejected.
- 7) ☒ Claim(s) 2 and 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/01, 5/02, 7/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-9 are pending in the application.

Specification

2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

The limitation recited in Claim 4, line 6 (the multiplexed transmission) does not have antecedent basis in the specification. The same comment applies to Claim 6, line 22 (the permuting inverse processor) and Claim 7, line 9 (the multiplexed transmission signals).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 4 -7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the multiplexed transmission signals" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claim 5 recites the limitation "the complex spreading portion" in line 18. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 recites the limitation "the permuting inverse processor" in line 22. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "the multiplexed transmission signals" in line 9. There is insufficient antecedent basis for this limitation in the claim.

Claims 8-9 are rejected by virtue of their dependency (on Claim 7).

Claim Rejections – 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Popovic' (US 6393047 B1) in view of Kang et al. (US 6377539 B1), and further in view Sugiyama et al. (US 5280537) and Hamada et al. (US 6359875 B1).

As to **Claim 1**, Popovic' discloses a spreading code sequence generator and a spread spectrum communication system including a transmitter and receiver (Fig. 3) using the code generator for performing spread spectrum communications based on a direct sequence spreading scheme (col. 1, lines 25-27), wherein the transmitter (col. 5, line 6) comprising a complex spread portion (spreader 32; col. 5, line 7) for multiplying

(multipliers 52 and 54; col. 5, line 64 – col. 6, line 3) an I-phase component signal and a Q-phase component signal of the transmission signal (information streams; col. 5, line 4 – col. 6, line 3) by one type of complex number sequence (a set of complex numbers; col. 1, lines 26-29; channelization codes, col. 6, line 2; col. 6, lines 11-15); a multiplier (complex multiplier 60; col. 6, lines 25-32) for multiplying the signals output from the complex spreading portion by a sequence; and a carrier modulator (modulator 34; col. 6, line 2; Fig. 3) for performing carrier modulation of the signals having undergone waveform shaping (filters 62, 64; col. 6, line 34); and the receiver (receiver branch; col. 5, line 30) comprising (col. 5, lines 30-46; Fig. 3) a carrier demodulator (demodulator 48, col. 5, line 34) for performing carrier demodulation of the received signal; (similar but reverse operations carried out in the receiver branch; col. 5, lines 30-40) a multiplier for multiplying the two types of signals output from the carrier demodulator; and a complex despreading portion (despreader 46; col. 5, line 36) for performing despreading (similar schematic would apply to the demodulator and despreader; col. 5, lines 48-54).

However, Popovic' is silent on using a pseudo-random sequence for multiplying the signals output from the complex spreading portion, a roll-off filter for waveform shaping, and a phase-correcting portion for performing phase-correction.

In disclosing a method for generating quasi-orthogonal code and the spreader in mobile communication systems, however, Kang et al. teaches Kang et al. a PN pseudo-random sequence can be used for complex spreading (by multipliers 1023 and 1025) of the signals output from the complex spreading portion (Figs. 9 and 10, outputs from adders 1015 and 1017; col. 1, lines 2-4; col. 10, lines 36-39; col. 11, lines 23-29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Kang et al. into the method of Popovic' because complete synchronization between channels could possibly be achieved with PN masking.

Further, in disclosing a digital communication system using superposed transmission of high speed and low speed digital signals, Sugiyama et al. teaches using a roll-off filter for waveform shaping (col. 4, lines 66-68; col. 6, lines 51-53) of the I and Q signals obtained from the output of a spectrum spreader of a direct sequence type (Fig. 3; col. 4, line 62) and supplying the waveform shaped output to a QPSK modulator (col. 5, lines 4-6). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further incorporate the teachings of Sugiyama et al. into the method of Popovic' (in view of Kang et al. mentioned above) because it would be a well known waveform shaping filter for pulse shaping.

Further, in disclosing a CDMA receiver receiving a discrete sequence CDMA signal produced through QPSK spreading modulation (col. 1, lines 5-9), Hamada et al. teaches the CDMA receiver including a phase-correcting portion (a fading compensating portion 11; col. 5, line 6) for performing phase-correction (compensates the phase rotation due to the fading of the propagation path; col. 5, lines 5-8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Hamada et al. into the method of Popovic' (in view of Kang et al., and further in view of Sugiyama et al., mentioned above) because it provides for correcting possible phase rotation of the despread output

signal.

Claim 4 inherits all the limitations of Claim 1. Further, Kang et al. discloses a mapping circuit (mappers 811 and 813; col. 9, lines 45-58) disposed prior to the transmitter for mapping signals to points on the I-Q plane (Fig. 8). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate this feature into the method of Popovic' (in view of Kang et al., and further in view of Sugiyama et al., mentioned above) because it provides for demultiplexing odd and even data, when the communication system uses QPSK modulation.

Allowable Subject Matter

8. Claims 2 and 3 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claim 5 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

10. Claims 6-9 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Other prior art cited

11. The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Bang et al. (US 6222873 B1) discloses an orthogonal complex spreading method and apparatus for multichannel.

Zhou et al. (US 6252899 B1) discloses a complex despreading system.

Kelton et al. (US 6031865) discloses rapidly decorrelating spreading sequences for DS-CDMA transceivers.

Popovic' et al. (US 6363106 B1) discloses a method and apparatus for despreading OQPSK spread signals.

Lomp et al. (US 5796776) discloses a code sequence generator in a CDMA modem.

Contact information

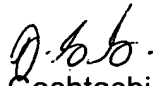
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jamshid Goshtasbi-G., whose telephone number is (571) 272-3012. The examiner can normally be reached on M-F 8:00/4:30.

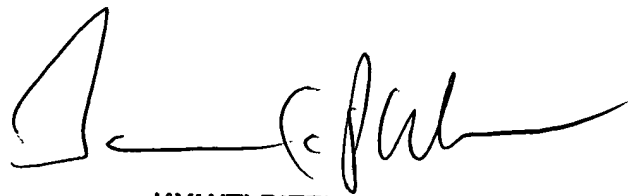
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel, can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

Art Unit: 2637

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jamshid Goshtasbi-G.
Examiner
Art Unit 2637


JAYANTI PATEL
SUPERVISORY PATENT EXAMINER